REMARKS

This amendment is in response to the Office Action of May 27, 1999 in which the Examiner objected to the Information Disclosure Statement, the drawings, specification and claims for certain formal reasons. With respect to the Information Disclosure Statement, applicants' representative filed copies of the publications in a related application. The applicants' representative is in the process of petitioning for a suspension of the rules to allow for the filing of one set of references to satisfy the filing requirements in a number of related cases.

With respect to the drawings, a reference to the auxiliary winding 9 is set forth in the specification. With respect to the specification, Fig. 6 has been described in the body of the specification. No new matter is believed to have been added by virtue of this amendment.

With respect to the claim objections, the article "The" has been substituted for the article "A" in the noted claims.

The subject matter of claims 3, 24, 25 and 32 has been properly incorporated into the specification.

With respect to the Examiner's objection to the terms "substantially", "sufficient" and the like, the claims have been amended in order to recite the related structure. For example, at least one of the semiconducting layers in the insulation layer form a monolithic structure having a coefficient of thermal expansion which is substantially the same. It

should be understood that substantially does not necessarily have to be exactly the same because, it is often difficult to have two materials with exactly the same properties at all times and under all conditions. However, in the context of the invention, the coefficients of thermal expansion are sufficient so that these layers stay together and form a monolithic structure as set forth in the specification. Thus, it is believed that the claim as amended recites structure which renders the claim definite. In claim 34, the term "sufficient" has been deleted.

In claims 40-42, the claims have been amended to more clearly recite the structure forming the recited functions.

The Examiner has rejected claims 1-9, 11, 12 and 15-44 under 35 U.S.C. 103 as unpatentable over Fig. 3 in the application in view of Elton '165.

Claim 10 is rejected as allegedly obvious over Elton in view of Nikitin '244. Claims 13 and 14 are rejected over Elton '165 in view of Lauw '147.

Rejection of the claims is respectfully traversed for the reasons set forth below.

Elton '165 describes a high voltage cable having an inner layer 144 of semiconducting pyrolized glass fiber material and/or an outer layer 110 of the same material whereby the outer layer is grounded. When Elton et al. '165 is viewed as a whole, it does not suggest that such an electrical cable would be useful in the device illustrated in Fig. 3 of the present application.

The Examiner asserts that the Fig. 3 prior art drawing discloses the claimed invention except for having a winding comprising an insulation system and at least two semiconducting layers having the same coefficient of thermal expansion. The Examiner asserts further that Elton teaches such a cable and thus it would be obvious to combine the references.

However, it is respectfully submitted that once the teaching of Elton is fully considered, the combination asserted by the Examiner should be withdrawn. Even though is it is suggested in Elton to apply a semiconducting layer to a winding in a dynamo-electric machine, there is no indication to use the cable in Elton in a dynamo-electric machine. Indeed, the disclosure of Elton '165 describes three or four different applications for a semiconducting layer. One application is for using a pyrolized glass layer in a conventional high current , low voltage winding of a dynamo-electric machine. A second application is for a housing to reduce electric discharge in an enclosed circuit. Finally, Elton '165 employs a semiconducting pyrolized glass layer in a conventional cable. However, there is no proposal to use the cable shown in Elton in the insulating layer in a dynamo-electric machine. It is only the semiconducting tape that is used in an electric machine. The arrangement in Elton does not provide a solid insulating system as described and disclosed in the present invention. It cannot be considered obvious to one skilled in the art to use such a cable in a machine because the time of the invention, it was not known

to use such a cable with solid insulation as a winding in a machine and there is no teaching that would lead one skilled in the art to such a conclusion.

With respect to the Examiner's rejection of claim 10 over Elton in view of Nikitin, neither reference shows a cable having insulated conductors. Elton '165 particulary shows a plurality of strands, but there is no suggestion that the strands are mutually insulated. Nikitin shows a high voltage element in an insulating sleeve. Nikitin develops a high voltage generator based on a complex and expensive oil/paper insulation systems used for both the insulation and cooling as is done in conventional power transformers. This differs from the invention in many respects. One of the most important features of the invention is that it uses solid insulation with semiconducting layers giving full control of the electric fields within the stator winding as it is positioned in the stator and the end region areas. Nikitin et al. shows an arrangement of a cable type termination around high voltage elements. See for example, column 3, lines 21-26. Outside the termination, in the end region, the electric field is no longer confined within the stator winding. The end winding region of Nikitin is filled with oil for insulation and cooling. The present invention does not use end winding termination or oil insulation.

Another important difference is that Nikitin teaches a limited number of slots per pole in the stator winding. See for example column 2, line 68 and column 3, line 1 and Fig. 3. The present invention uses numerous slots per pole.

With respect to Lauw, the notion of not having to use a transformer in a direct connection with the grid is a benefit of the invention. Especially in a high voltage application, transformerless systems have not been possible until the present invention. It is not the use of step up or step down transformers that is important. It is the elimination of the transformer altogether which results from the invention. Thus, Lauw is believed to be inapplicable.

Finally, it should be understood that the insulated strands in the present invention prevent high eddy currents which can damage a conventional cable under sustained operating conditions. In this connection, the Examiner's attention is respectfully directed to Breitenbach et al. 4,785,138 which has been cited in a number of related applications, some of which are noted in the Information Disclosure Statement. Breitenbach et al. discloses a cable for use in a linear motor where the cable includes a current carrying conductor, a conductive inner layer surrounding a conductor, an insulation layer surrounding an inner layer and an outer conductive layer surrounding the insulating and a conductive sheathing surrounding the entire cable. The present invention is directed to a generating device in which at least one of the windings comprises a cable including a conductive member, an inner layer of semiconducting material, an insulation layer and an outer layer. In addition, the present invention employs insulated and uninsulated strands in the conductive core. Breitenbach et al. discloses an electric cable for use as a phase winding in a linear motor. In such motors, the stator can be very long and the winding is

fixed in a meander like manor. Linear motors are used in intermittent service, for example, as a motor power unit in a train or for railway operations. In such applications, the stator is divided into sections, each section length being several hundred meters. The length of the stator is such that the inductance and consequently the reluctance of the winding is very high. Therefore, voltages of about 10KV are needed to get sufficiently high current in the winding for driving trains. Such a high current requires a conductor with considerable total conducting area. However, the voltage is still only in a low voltage region of up to about 1-10kV. Electric machines of the type described in the invention differ from a linear motor generally in that the former is run continuously using the same windings whereas a linear motor is run intermittently and has time to cool off. The insulated strands in the core element of the present invention prevent high eddy currents from overheating the cable. Breitenbach also suggests that the conductive outer layer allows a path for charge currents to surround as to prevent scorch spots where the cable phases come in contact. The present invention is designed to avoid high currents in the cable insulation.

In view of the foregoing, it is respectfully requested the Examiner reconsider his rejection of the claims, the allowance of which is earnestly solicited.

Respectfully submitted,

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